

How can we restructure the urban structure by downsizing of activity space in daily life

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Abstract

The purpose of this series of studies is to promote the compactness of living areas along major public transportation systems and to examine measures to enable such compactness in reorganizing mature conurbations. As the first step of this research, we developed indices to measure the compactness of living activity space and analyze the actual compactness of them in the Keihanshin conurbation. Daily life activities include various purposes, such as commuting, purchasing, and leisure activities. Therefore, this paper proposes an index based on the concentration rate of trips by purpose of daily activities to measure the concentration tendency of each of these purposes.

Background & Results

Sustainable development is attracting attention worldwide, and it will be essential to compact mature conurbations. However, in a society with a declining population, reduced development pressure, and limited financial resources, it isn't easy to provide all residential areas with the same functions to meet the various purposes of daily activities. Therefore, it is necessary to create urban structures that allow people to move between multiple areas and use each other's facilities according to their purposes, centered on public transportation and other means.

This series of studies focused on "promoting the compactness of activity space along major public transportation systems." As the first step, we (1) developed an index to measure the compactness of lifestyle activity zones and (2) analyzed the concentration of lifestyle activity objectives in each railroad station area.

As an indicator to measure the compactness of living activity zones, we focused on the number of trips by purpose using personal trip data. We then found a method to categorize the extent of living activity zones by combining the trip concentration rate by purpose and standard deviation in the railroad station areas. Figure 1 shows a color-coded representation of the typology obtained for the municipalities in the Keihanshin conurbation. Figure 2 shows the significant lifestyle combination destinations in the Keihanshin conurbation. It confirms that more than 30% of railroad stations in the Keihanshin conurbation have three to four lifestyle destinations clustered in their station areas.

Significance of the research and Future perspective

The significance of this series of studies is to provide knowledge contributing to the restructuring of urban structures toward sustainability. Until now, the compactness of activity space has been measured in terms of the total number of trips. However, this biases the results toward places where the number of trips is concentrated for a specific activity, such as office areas. This paper clarifies this point by presenting an indicator based on trip concentration for daily activities for different purposes. In future research, we will keep analyzing trip concentration by generation and consider a reorganization plan for an urban structure that balances the compactness of residential and lifestyle activity areas.

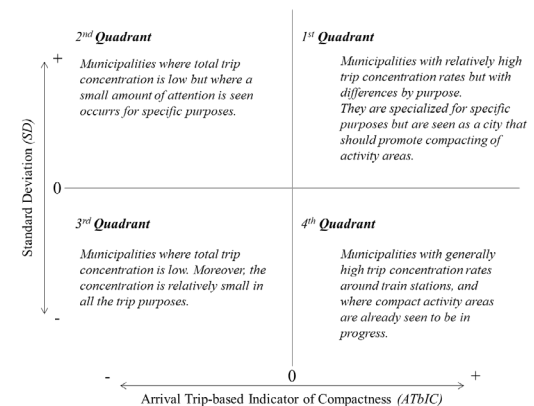
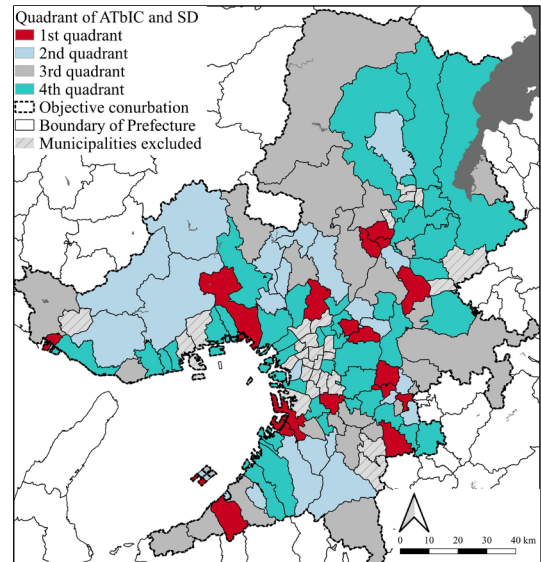


Figure 1: Types of Municipalities Based on Compactness of Living Activity Areas

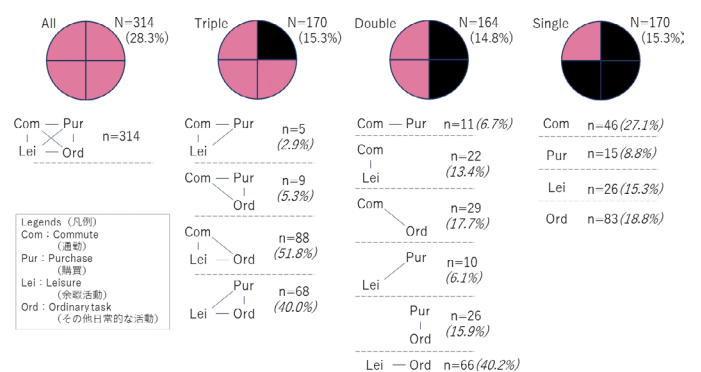


Figure 2: Overlapping types of lifestyle activities in railroad station areas